



## Epidemiologic Notes &amp; Reports

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**Farm Injury Surveillance in Kentucky—What have we learned?**

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Farming remains one of the most hazardous occupations in the US. Fatalities far exceed those of other occupations, and injury associated with farming has long been recognized as a serious health concern (NSC 1994). In the past, the absence of high quality, relevant injury data limited our ability to initiate interventions to reduce injury and death.

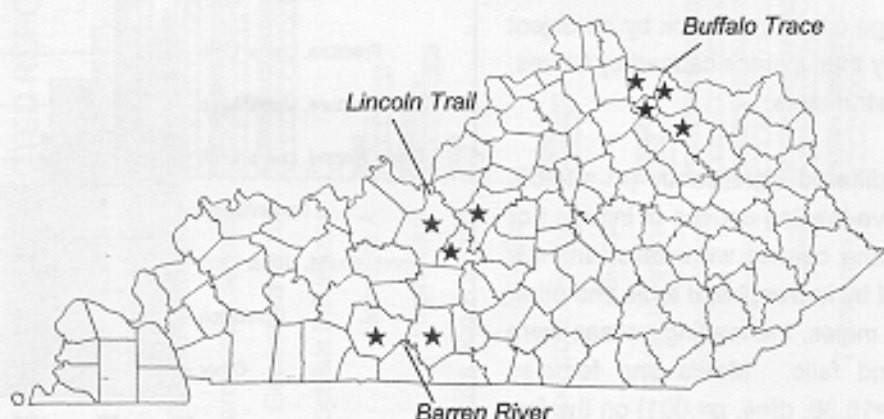
Between April 1, 1992 and December 31, 1995, the Occupational Health Nurses in Agricultural Communities (OHNAC) Project, an ongoing farm injury surveillance project in nine Kentucky counties, recorded 2089 injuries. Three community health nurses assigned to selected

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counties in three district health departments (see Figure 1) have systematically collected injury cases as part of a cooperative agreement between the Kentucky Department for Public Health, Division of Epidemiology, and the National Institute for Occupational Safety and Health (NIOSH). This article describes the data collected over a 43-month period, summarizes activities initiated to reduce farm injury, and offers recommendations for injury prevention.

**Figure 1. Occupational Health Nurses in Agricultural Communities (OHNAC) Project**



Barren River: Warren and Barren Counties; Buffalo Trace: Bracken, Fleming, Mason and Robertson Counties; Lincoln Trail: Hardin, Larue, and Nelson Counties

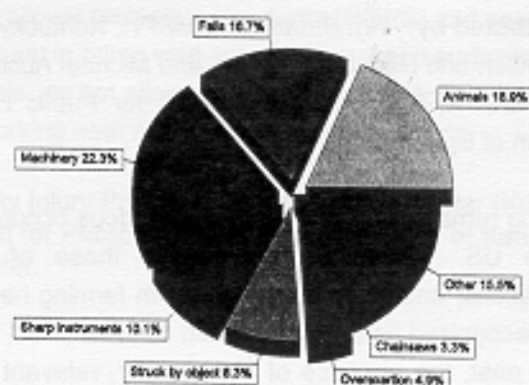
### Farm Injury Surveillance in Kentucky (continued from page 1)

Nearly 17 percent (n=353) of those injured were children less than 18 years of age, 19 percent (n=400) were over 54 years old, and the remaining 64 percent (n=1337) were between 18 and 54. Nearly 85 percent were male, and nonwhite individuals accounted for only 3 percent of those injured during the period. Of those who were greater than 17 years old, 65 percent were married, 24 percent were single, 9 percent were divorced, and 2 percent were widowed. Of those greater than 25 years, 53 percent had at least 12 years of education, 30 percent had less than a high school education, and in 17 percent of cases the level of education was unknown. In 65 percent of the cases, private insurance covered the cost of treatment. Medicaid and Medicare covered the cost of services in 16 percent of the cases, and in 20 percent those injured were uninsured.

Analysis of injury etiology using ICD E-codes identifies machinery as the most frequent cause. Almost one-quarter (22 percent) of the injuries were associated with farm machinery, the most common being the farm tractor. The second leading cause was farm animals (19 percent), followed by falls (17 percent). Other sources of farm injury are presented in Figure 2. For all three age groups (under 18; 18-54; over 54), the leading three causes were the same: machinery, animals and falls. Knives, hand tools and other sharp instruments, and being struck by an object, were the next two most frequent causes for both children and adults. However, for those greater than age 54, being struck by an object occurred more frequently than injuries caused by knives, hand tools and sharp instruments.

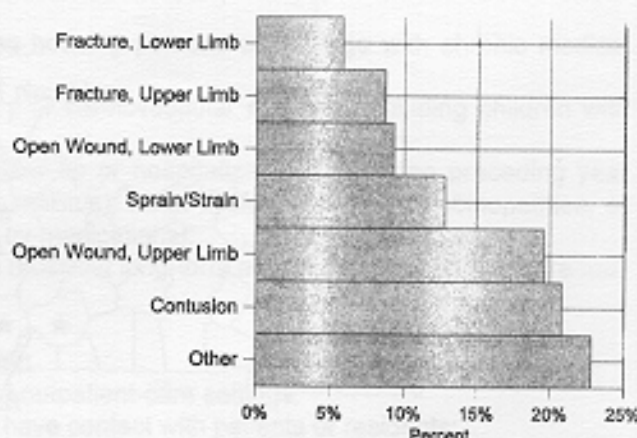
The three age groups differed significantly ( $\chi^2=24.59$ ,  $df=8$ ,  $p=.0018$ ) on the five leading causes of injury. For females, the three leading causes were falls, animals and machinery, followed by knives, hand tools and other sharp instruments. For males, the leading causes were machinery, animals and falls. Males and females differed significantly ( $\chi^2=18.36$ ,  $df=4$ ,  $p=.001$ ) on the five leading causes of injury.

Figure 2. Etiology of Farm Injuries



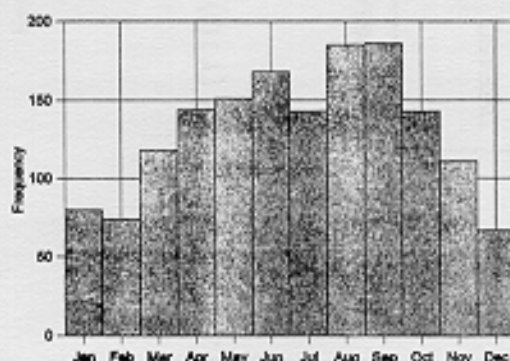
Nature of injury is shown in Figure 3, the single most common being contusions, followed by open wounds to arms.

Figure 3. Nature of Farm Injuries



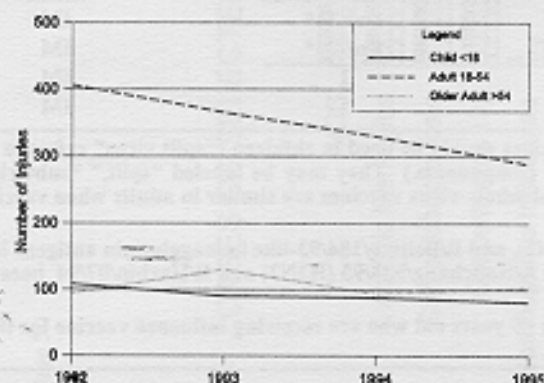
Thirty percent of the injuries occurred during the spring months of April (9.2 percent), May (9.6 percent) and June (10.7 percent). Almost one-quarter occurred in August (11.8 percent) and September (11 percent). See Figure 4. (Since data collection began in April of 1992, in order to include only complete years this graph covers 1993 through 1995.)

**Figure 4. Farm Injuries by Month**



The number of injuries by age group during the four years of surveillance is shown in Figure 5. To provide a full year of 1992 data for comparison purposes, an estimated injury count for the first quarter of that year was calculated using the average number of injuries reported during January, February and March of 1993-95. The graph reveals a declining trend in the number of injuries for the adult age group (18-54); a small decline is seen for children (<18); and the number of injuries that occurred in the age group of older adults (>54) has remained fairly constant over the four-year period.

**Figure 5. Injury Trend by Age Group**



Injury severity was determined by classifying the injuries into four groups: Those requiring only outpatient services (89 percent), those requiring an inpatient stay (6 percent), those severe enough to warrant transfer to a trauma center (3.6 percent), and those resulting in death (1 percent, n=25).

Farm injury severity in Kentucky is underscored when comparing these injury data to the American Hospital Information Management Association (AHIMA) data. Nationwide, according to AHIMA, for every death due to injury there are 45 hospital admissions and 1200 emergency department visits as a result of injury (1:45:1200). In Kentucky, the ratio for agricultural injury is one fatality for every 8 admissions and 74 emergency department visits. This ratio of 1:8:74 indicates a higher degree of farm injury severity as measured by treatment disposition.

The years of potential life lost (YPLL), related to working life, was calculated by subtracting age at death from the usual retirement age of 65. Table 1 shows the five industries with the highest YPLL value and the highest number of fatalities during 1995, as identified by the Kentucky Fatality Assessment and Control Evaluation (FACE) Project.\*

**Table 1. Years of Potential Life Lost (YPLL) by Industry\*, 1995**

Industry (# of fatalities)	YPLL Based on Age 65
Agriculture/Forestry/Fishing (n=50)	543
Manufacturing (n=20)	462
Construction (n=14)	416
Mining (n=13)	357
Transportation/Public Utilities (n=17)	284

\*Standard Industrial Classification Manual, 1987  
Source of data: 1995 KY FACE

The Agriculture/Forestry/Fishing industry division shows the highest number of years of potential life lost compared to any other industry in Kentucky. Nearly all (96 percent) of the fatalities that occurred in that division were related to agriculture.



Since 42 percent (n=20) of the farmers killed on the job during 1995 were over age 65, the YPLL was also calculated based on age 85 for the Agriculture/Forestry/Fishing industry, with the result of 1,289 years of potential life lost. Farmers often work past the usual retirement age of 65; thus more years of potential work life can be lost.

Activities initiated in the three Kentucky regions include farm safety day camps, health care provider training on the differential diagnosis of green tobacco sickness (GTS), educational programs at schools, and participation in health fairs, health department planning and other community-based educational programs.

To reduce farm injury, initiatives which are community based and community owned will likely have the strongest impact. Farm hazard recognition and injury prevention should be in the curricula of grade school safety programs. Some specific recommendations for prevention are to ensure that all tractors have rollover protective structures (ROPS) and seatbelts, maintain a master shield over the power take-off (PTO), keep equipment in prime working condition, keep surfaces such as stairs and elevated work sites free of debris, do not crowd animals, do not allow extra riders on tractors/equipment, and wear well-fitted clothing with no strings or frayed edges when working near machinery with moving parts.

\*FACE is an occupational fatality surveillance project of the Kentucky Injury Prevention and Research Center (KIPRC); (606-257-4955) KIPRC is a partnership of the Kentucky Department for Public Health and the University of Kentucky, which is located at the University of Kentucky Chandler Medical Center.

REFERENCES Available Upon Request.

### Influenza Prevention 1996-1997

The Advisory Committee on Immunization Practices recommends that organized influenza vaccine campaigns be conducted between early October and mid-November. It is important to avoid administering vaccine too far in advance of the influenza season in facilities such as nursing homes because antibody levels may begin to decline within a few months of vaccination. Those not immunized during the campaign period may be offered vaccine at any time during the season, even until April in case of late influenza activity. Opportunities to vaccinate persons at high risk for complications of influenza should not be missed.

A new antigen in the 1996-1997 vaccine is A/Wuhan/359/95-like(H3N2). The A/Texas/36/91-like (H1N1) and B/Beijing/184/93-like antigen are repeated from last year. Organized campaigns should target the following groups:

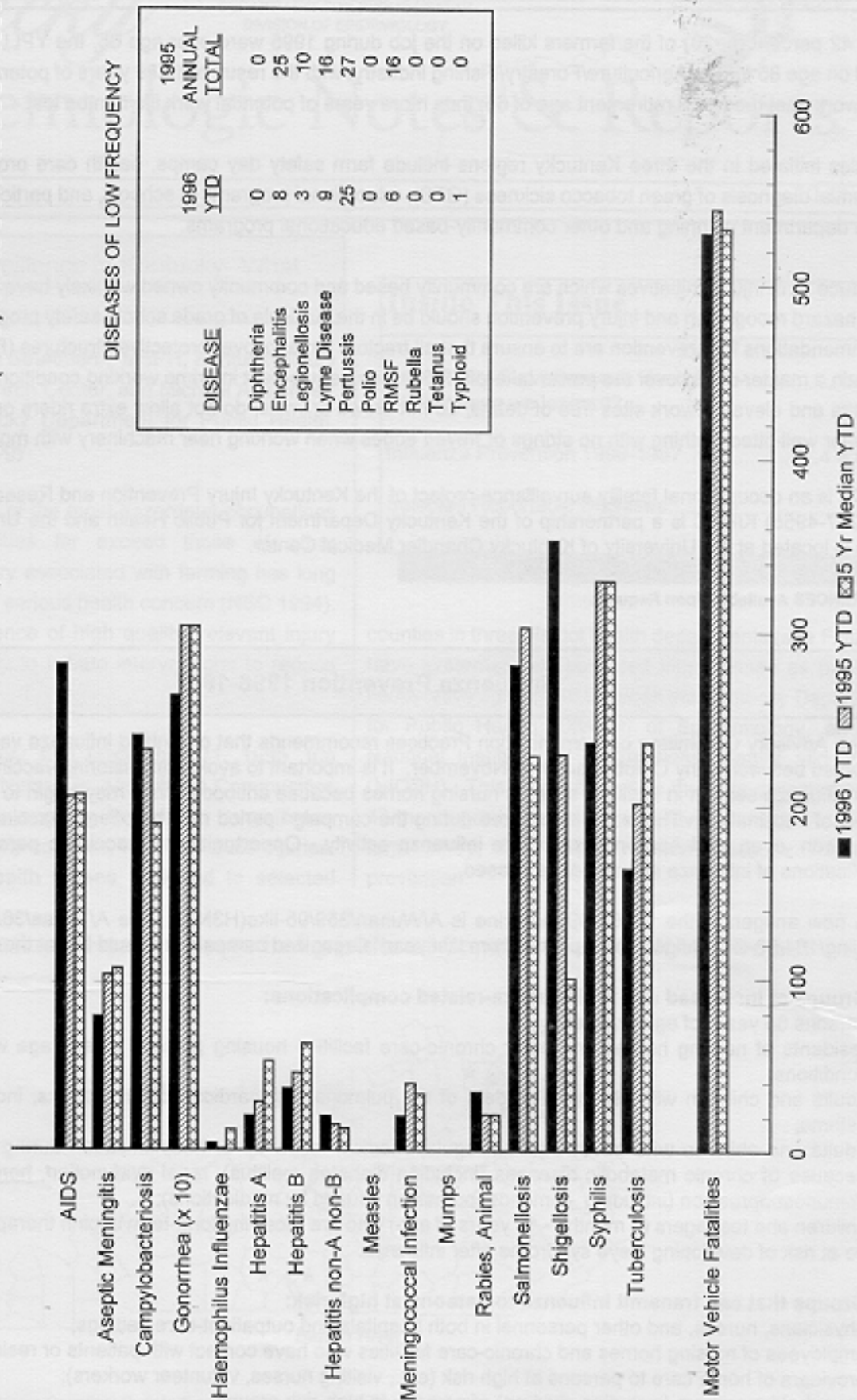
**I. Groups at increased risk for influenza-related complications:**

- persons 65 years of age or older;
- residents of nursing homes and other chronic-care facilities housing persons of any age with chronic medical conditions;
- adults and children with chronic disorders of the pulmonary or cardiovascular systems, including children with asthma;
- adults and children who have required regular medical follow-up or hospitalization during the preceding year because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications);
- children and teenagers (6 months - 18 years of age) who are receiving long-term aspirin therapy and therefore may be at risk of developing Reye syndrome after influenza.

**II. Groups that can transmit influenza to persons at high risk:**

- physicians, nurses, and other personnel in both hospitals and outpatient-care settings;
- employees of nursing homes and chronic-care facilities who have contact with patients or residents;
- providers of home care to persons at high risk (e.g., visiting nurses, volunteer workers);
- household members (including children) of persons in high-risk groups.

## CASES OF SELECTED REPORTABLE DISEASES IN KENTUCKY, YEAR TO DATE (YTD) THROUGH AUGUST 1996



Disease numbers reflect only those cases which meet the surveillance definition.

COMMONWEALTH OF KENTUCKY  
CABINET FOR HEALTH SERVICES  
DEPARTMENT FOR PUBLIC HEALTH  
275 EAST MAIN STREET  
FRANKFORT, KENTUCKY 40621

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### Influenza Prevention 1996-1997 (Continued from Page 4)

In addition to these two target groups, vaccination should be considered for persons with human immunodeficiency virus infection, travelers to countries where influenza is likely to occur, persons providing essential community services, students or other persons in institutional settings, such as dormitory residents, and for any person wishing to reduce the chance of acquiring influenza infection.

Recommended doses for influenza vaccine are shown in the following table.

### INFLUENZA VACCINE DOSAGE, BY AGE OF PATIENT

<u>Age Group</u>	<u>Product*</u>	<u>Dosage</u>	<u>Number of Doses</u>	<u>Route</u>
6-35 mos	Split virus only	0.25 mL	1 or 2**	IM
3-8 yrs	Split virus only	0.50 mL	1 or 2**	IM
9-12 yrs	Split virus only	0.50 mL	1	IM
>12 yrs	Whole or split virus	0.50 mL	1	IM

Because of the lower potential for causing febrile reactions, only split virus vaccines should be used in children ("split virus" refers to viruses that have been chemically treated to reduce the level of potentially pyrogenic components.) They may be labeled "split," "subvirion," or "purified surface antigen" vaccine. Immunogenicity and side effects of split- and whole-virus vaccines are similar in adults when vaccines are used according to the recommended dosage.

\* Contains 15 µg each of A/Texas/36/91-like (H1N1), A/Wuhan/359/95-like (H3N2), and B/Beijing/184/93-like hemagglutinin antigens in each 0.5 mL. (Note: U.S. manufacturers will use the antigenically equivalent strains A/Nanchang/933/95 (H3N2) and B/Harbin/07/94 because of their growth properties.)

\*\*Two doses administered at least 1 month apart are recommended for children <9 years old who are receiving influenza vaccine for the first time.